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Attention: MAIL STOP APPEAL BRIEF - PATENTS

Group Art Unit: 2618

Fax: (571) 273-8300

Examiner: Charles Chiang Chow

Supervisory Examiner: Edward Urban

UNITED STATES PATENT AND TRADEMARK OFFICE

Phone: (571) 272-7889

Pages: Cover + 23 = 24

Date: April 19, 2007

From: Georgann S. Grunebach

Fax: (310) 964-0941

Assistant General Counsel

Phone: (310) 964-4615

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Georgann S. Grunebach, Reg. No. 33,179  
(Printed Name of Depositor)April 19, 2007  
(Date of Signature)Re: Serial No.: 09/325,110  
Filing Date: June 3, 1999

Attorney Docket No. PD-990033

Please find attached:

- SUBSTITUTE BRIEF ON APPEAL IN RESPONSE TO NOTICE OF NON-COMPLIANT APPEAL BRIEF DATED APRIL 11, 2007 (23 pages)

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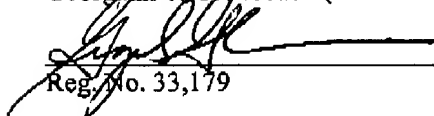
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(Signature) April 19, 2007 (Date of Signature)

Reg. No. 33,179

Customer Number 020991

**Patent**  
**PD-990033****IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Appellant: Carl S. Anselmo

Serial No: 09/325,110

Group Art Unit: 2685

Filed: 06/03/99

Examiner: Chow, Charles Chiang

Title: METHOD AND SYSTEM FOR PROVIDING SATELLITE  
COMMUNICATIONS USING ON-ORBIT PAYLOAD  
CONFIGURATION AND RECONFIGURATION**SUBSTITUTE BRIEF ON APPEAL**Mail Stop Appeal Brief - Patents  
Commissioner for Patents  
P. O. Box 1450  
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Sir:

The following Appeal Brief is submitted in response to the Notice of Appeal filed February 27, 2007 and the Notice of Non-Compliant Appeal Brief mailed April 11, 2007.

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**I. Real Party in Interest**

The real party in interest in this matter is The DIRECTV Group, Inc., of El Segundo, California which is 34 percent owned by Fox Entertainment Group, which is approximately 82 percent owned by The News Corporation, Limited.

**II. Related Appeals and Interferences**

There are no other known appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

**III. Status of the Claims**

Claims 1-8, 11, 12, 15-18 and 21-31 stand rejected in the Final Office Action and are appealed herein. Claims 9-10, 13-14 and 19-20 have been canceled.

**IV. Status of Amendments**

There have been no amendments filed subsequent to the Advisory Action dated February 6, 2007.

**V. Summary of Claimed Subject Matter**

Claim 1 is directed to a system 300 that is generally illustrated in Figure 1. The preamble of claim 1 is directed to a system 300 for providing high frequency data communications in a satellite-based communication network 306. The system 300 includes a plurality of communication satellites 302, each having uplink antennas 314 and downlink antennas 316 capable of receiving and transmitting a plurality of signals. Each of the satellites 302 has a communication control circuit 318. The general satellite system 300, the satellites 302 and the communication network 306 are described in the paragraph bridging pages 4 and 5. A communication control circuit 318 is described in the last two paragraphs of page 5.

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The system includes at least one of the satellites being a reconfigurable satellite 304. The reconfigurable satellite 304 is first described in the paragraph bridging pages 4 and 5.

The reconfigurable satellite 304 has a programmable frequency synthesizer 340 coupled to an up converter 336 and a down converter 332 is described on lines 13-17 of page 6. The reconfigurable satellite 304 further includes a routing table 372. The routing table 372 stores tuning information therein. The routing table 372 is described on page 8, lines 15-20.

The reconfigurable satellite 304 also includes a controller 342 coupled to the communication control circuit 318. The controller 342 controls a frequency reconfiguration of the communication control circuit 318 from a first frequency range to a second frequency range through the programmable frequency synthesizer 340 in response to the tuning information. This is described on lines 14-20 of page 8.

Claims 2-5 stand or fall together with claim 1.

Claim 6 recites that the communication control circuit 318 comprises a time division multiple access switch 352 described on page 7, second full paragraph, and illustrated in Figure 3.

Claim 7 recites that the communication control circuit 318 comprises a packet switch. A packet switch is illustrated in Figure 4 and described on page 8, line 26.

Claim 8 stands or falls together with claim 1.

Claims 11 and 12 ultimately depend from claim 15. Claims 11 and 12 ultimately stand or fall together with claim 15.

Claim 15 is another independent claim. Claim 15 recites a receive array 320 and a receive beam forming network 324. Claim 15 further recites a transmitter array 322 and a

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transmit beam forming network 328. The above four elements are described in the last two paragraphs of page 5 and are illustrated in Figure 2.

Claim 15 further recites a communication control circuit 318 for controlling communications of the satellite 302, 304. The communication control circuit 318 is an up converter and a down converter. Claim 15 further recites a reconfiguration circuit that includes an on-board computer and a routing table 372 in a similar fashion to claim 1.

Claims 16 and 17 correspond directly to claims 6 and 7 and, thus, will not be further described here.

Claim 18 is an independent method claim that includes deploying a reconfigurable satellite, transmitting reconfiguration instructions to the satellite 304, a frequency configuration of the payload of the reconfigurable satellite 304 in response to tuning information in a routing table 372 by changing an up converter frequency and down converter frequency using a programmable frequency synthesizer 340. The routing table 372 and the programmable frequency synthesizer 340 are all illustrated in Figure 3.

Claim 18 further recites repositioning a satellite from a network position and moving the reconfigurable satellite into the network position. The movement of the satellite is described in the second full paragraph of page 9.

Claim 21 recites that the step of reconfiguring a satellite comprises changing the amplitude or phase coefficients of a transmit and receive beam. This is described in the paragraph bridging pages 8 and 9.

Claim 22 recites the further step of storing tuning information in a routing table. This is described at the end of the second full paragraph on page 8.

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Claim 23 recites the step of reconfiguring the payload comprises changing the amplitude or phase coefficients of a beam in response to the tuning information in the routing table. This is described in the second full paragraph of page 8 and in the paragraph bridging pages 8 and 9.

Claims 24 and 25 recite that moving the satellite is performed using east/west station-keeping and north/south station-keeping, respectively. This is specifically described on lines 10-14 of page 9.

Claim 26 recites the step of updating the routing table 372 from an order wire. This is described on the first line of page 9.

Claim 27 recites updating the routing table 372 from an RF control channel. This is described also on the first line of page 9.

Claim 28 is another independent claim directed to a method of configuring a satellite. Claim 8 recites deploying a reconfigurable satellite, storing frequency tuning information in a routing table 372. Storing the information in a routing table 372 is described in the first two full paragraphs of page 8. Claim 28 also recites transmitting reconfiguration instructions to the satellite which is described in the paragraph bridging pages 8 and 9 and reconfiguring the frequency configuration of the payload of the reconfigurable satellite in response to the tuning information in the routing table 372 by changing an up converter frequency and a down converter frequency using a programmable frequency synthesizer 340. This is described on lines 16-19 of page 6.

Claim 29 recites reconfiguring the payload comprises changing the amplitude or phase coefficients of a beam in response to the tuning information in the routing table 372. This is similar to claim 23 described above. This is described in the second full paragraph of page 8 and in the paragraph bridging pages 8 and 9.

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Claim 30 recites updating the routing table 372 from an order wire. This is described in claim 26 above (page 9, line 1).

Claim 31 recites updating the routing table 372 from an RF control channel. This is described in claim 27 above (page 9, line 1).

#### **VI. Grounds of Rejection to be Reviewed on Appeal**

The following issues are presented in this appeal:

Whether Claims 1 and 3-5 are unpatentable under 35 U.S.C. §103(a) over *Hammill et al.* (6,173,178) in view of *Floury et al.* (5,963,845) and *Siwiak* (5,640,166).

Whether Claim 2 is unpatentable under 35 U.S.C. §103(a) over *Hammill et al.* (6,173,178) in view of *Floury et al.* (5,963,845) and *Siwiak* (5,640,166) in further view of *Wiswell* (6,205,319).

Whether Claims 6-7 are unpatentable under 35 U.S.C. §103(a) over *Hammill et al.* (6,173,178) in view of *Floury et al.* (5,963,845) and *Siwiak* (5,640,166) in further view of *Brown* (6,157,621).

Whether Claim 8 is unpatentable under 35 U.S.C. §103(a) over *Hammill et al.* (6,173,178) in view of *Floury et al.* (5,963,845) and *Siwiak* (5,640,166) in further view of *Galvin* (6,182,927).

Whether Claims 11, 12 and 15 are unpatentable under 35 U.S.C. §103(a) over *Floury et al.* (5,963,845), *Wolcott* (6,317,583) and *Siwiak* (5,640,166).

Whether Claims 16 and 17 are unpatentable under 35 U.S.C. §103(a) over *Floury et al.* (5,963,845), *Wolcott* (6,317,583) and *Siwiak* (5,640,166) in further view of *Brown* (6,157,621).

Whether Claims 18 and 28 are unpatentable under 35 U.S.C. §103(a) over *Floury et al.* (5,963,845) and *Siwiak* (5,640,166) in further view of *Pizzicaroli* (5,813,634).

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Whether Claims 21-27 and 29-31 are unpatentable under 35 U.S.C. §103(a) over *Floury et al.* (5,963,845), *Wolcott* (6,317,583) and *Siwiak* (5,640,166) in further view of *Pizzicaroli* (5,813,634) and *Brown* (6,157,621).

## VII. Argument

**The rejection of Claims 1-3 and 5 under 35 U.S.C. §103(a) over *Hammill et al.* (6,173,178) in view of *Floury et al.* (5,963,845) and *Siwiak* (5,640,166)**

### *Independent Claim 1*

The independent claims were amended to recite that the frequency range is changed from a first frequency range to a second frequency range using the programmable frequency synthesizer. This amendment was to clarify the claims. Satellites typically operate over a particular frequency range. Different beams use different frequencies within the frequency range to operate so that interference between the beams is not formed. One difference between the present claims and the cited art, as will be described below, is the capability of controlling a frequency reconfiguration of the communication circuit from a first frequency range to a second frequency range using a programmable frequency synthesizer in response to tuning information from a routing table. This allows the satellite to be reconfigured quickly and conveniently.

The *Hammill* reference is cited for being a reconfigurable satellite. It is clear that the tuning information of the present application is used to tune the frequency through the controller. That is, the controller of Claim 1 controls "a frequency reconfiguration of the communication control circuit through the programmable frequency synthesizer." No frequency reconfigurations of beams are set forth. In column 4, lines 20-25 state, "A phased array antenna may also be used to generate the beams, and also provides the ability to reconfigure the antenna on the fly to transmit beams of varying sizes." While the size of the beams may be changed, no



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teaching or suggestion is provided for changing the frequency of the beams in response to a programmable frequency synthesizer and a routing table. In column 4, lines 23-25, the *Hammill* reference states "FIGS. 2-7 illustrate the beams of various frequencies and polarizations constituting the projection shown in FIG. 1." Appellants respectfully submit that this also does not teach frequency reconfiguration. As mentioned above, operating beams over a range of frequencies is known. This sentence merely describes a well-known practice and does not describe using a completely different frequency range.

The Examiner then goes on to state that the *Hammill* reference fails to teach the frequency synthesizer, a routing table, and a controller for controlling a frequency reconfiguration. Appellants agree.

The Examiner then cites the *Floury* reference for teaching a programmable frequency synthesizer. Appellants agree that a frequency synthesizer adapted to be controlled by a command line from the ground station to the controlled input is set forth.

The Examiner then goes on to state that the *Hammill* and *Floury* references fail to teach a routing table and a controller located on the satellite coupled to said communication control circuit. Appellants agree. The *Siwiak* reference is cited for this teaching. What is not taught in the *Siwiak* reference is controlling a frequency reconfiguration of the communication control circuit from a first frequency range to a second frequency range. The Examiner cites Table 1 in the *Siwiak* reference for teaching a routing table. The table and the corresponding text are in column 2, line 41 through column 3, line 42. Appellants respectfully submit that the Doppler compensation table illustrated in the *Siwiak* reference is not a routing table. The table merely provides the Doppler frequency value associated with the beam to a frequency synthesizer for compensating for the Doppler frequency shift associated with the beam being utilized. This is

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set forth in column 3, lines 22 through 26. A routing table is known in the art for controlling or routing beams through the satellite and satellite system. Even if Table 1 is considered a routing table, other differences between the claims and the *Siwiak* references are evident.

The Examiner cites column 2, line 41 through column 3, line 42 and Figure 2 for teaching a controller that controls a frequency reconfiguration of the communication control circuit from a first frequency range to a second frequency range through the programmable frequency synthesizer in response to the tuning information. Appellants respectfully submit that the *Siwiak* reference does not teach or suggest this. As mentioned above, the table is a Doppler shift table. One thing to notice is that the Doppler compensation values are in the kilohertz range. A typical satellite uses frequencies in the gigahertz range. Thus, the kilohertz range is only a minor shift. Also, by observing the values in the table, the Doppler compensation values are both positive values and negative values. Some of the beams have the frequency increased while other beams have the frequency decreased. Appellants respectfully submit that the two frequency ranges are not taught or suggested. In fact, because of the positive and negative changes or Doppler shifting values, the same frequency range is generally provided. Thus, two frequency ranges are not taught or suggested. This is further enhanced by the amount of any one of the frequency changes which are all relatively low. Thus, no teaching or suggestion is found in the *Siwiak* reference for a frequency reconfiguration from a first frequency range to a second frequency range through a programmable frequency synthesizer in response to the tuning information from a routing table.

Therefore, because each and every reference fails to at least "said controller controlling a frequency reconfiguration of said communication control circuit from a first frequency range to a second frequency range through said programmable frequency synthesizer in response to tuning

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information from the routing table," Appellants respectfully requests the Examiner for a reconsideration of the rejection of Claim 1.

*Dependent Claims 3-5*

Claims 3-5 stand or fall together with independent claim 1.

**The rejection of Claim 2 under 35 U.S.C. §103(a) over *Hammill et al.* (6,173,178) in view of *Floury et al.* (5,963,845) and *Siwiak* (5,640,166) in further view of *Wiswell* (6,205,319)**

*Dependent Claim 2*

Claim 2 stands or falls together with independent claim 1.

**The rejection of Claims 6-7 under 35 U.S.C. §103(a) over *Hammill et al.* (6,173,178) in view of *Floury et al.* (5,963,845) and *Siwiak* (5,640,166). in further view of *Brown* (6,157,621)**

*Dependent Claim 6*

Claim 6 depends from Claim 1. The *Brown* reference also does not teach or suggest the elements missing from Claim 1. Appellants, therefore, respectfully request the Board to reverse this rejection.

*Dependent Claim 7*

*Brown* does describe a packet switch but only mentions TDMA, not the use of a TDMA switch. Appellants, therefore, respectfully request the Board to Reverse this rejection as well.

**The rejection of Claim 8 under 35 U.S.C. §103(a) over *Hammill et al.* (6,173,178) in view of *Floury et al.* (5,963,845) and *Siwiak* (5,640,166) in further view of *Galvin* (6,182,927)**

*Dependent Claim 8*

Claim 8 stands or falls together with claim 1.

**The rejection of Claims 11, 12 and 15 under 35 U.S.C. §103(a) over *Floury et al.* (5,963,845), *Wolcott* (6,317,583) and *Siwiak* (5,640,166)**

*Dependent Claims 11 and 12*

Claims 11 and 12 depend from claim 15 and stand or fall together with claim 15.

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*Independent Claim 15*

Claim 15 is an independent claim and recites "A payload circuit for a satellite comprising: a receive array; a receive beam forming network; a transmit array; a transmit beam forming network; a communications control circuit for controlling communications of said satellite, said communications control circuit being an up converter and a down converter; and a reconfiguration circuit coupled to the communications control circuit for reconfiguring the communications control circuit, said reconfiguration circuit comprising a programmable frequency synthesizer coupled to the up converter and down converter, an on-board computer and a routing table having tuning information stored therein, said on-board computer controlling a reconfiguration of said communications control circuit from a first frequency range to a second frequency range through said programmable frequency synthesizer in response to said tuning information."

Claim 15 is similar to Claim 1 in that the reconfiguration circuit comprises a programmable frequency synthesizer coupled to the up converter and down converter and a routing table having tuning information therein. The onboard computer controls the reconfiguration of the communications control circuit through the programmable frequency synthesizer in response to the tuning information. As mentioned above with respect to claim 1, *Floury* and *Siwiak* do not teach or suggest the programmable frequency synthesizer and routing table combination. The *Wolcott* reference is not set forth for these teachings. The *Wolcott* reference also does not teach or suggest these missing elements. Although a selectable frequency is illustrated with respect to a synthesizer, the *Wolcott* reference also does not teach or suggest a programmable frequency synthesizer in combination with a routing table. Therefore,

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Claim 15 is also believed to be allowable over the combination of the *Floury*, *Wolcott* and *Siwiak* references.

**The rejection of Claims 16 and 17 under 35 U.S.C. §103(a) over *Floury et al.* (5,963,845), *Wolcott* (6,317,583) and *Siwiak* (5,640,166) in further view of *Brown* (6,157,621)**

*Dependent Claims 16 and 17*

Claims 16 and 17 depend from claim 15. None of these four references teaches or suggests a controller that controls a frequency reconfiguration from a first frequency range to a second frequency range through the programmable frequency synthesizer in response to the tuning information.

**The rejection of Claims 18 and 28 is unpatentable under 35 U.S.C. §103(a) over *Floury et al.* (5,963,845) and *Siwiak* (5,640,166) in further view of *Pizzicaroli* (5,813,634)**

*Dependent Claims 18 and 28*

Claim 18 is a method claim and recites "reconfiguring the frequency configuration of the payload of the reconfigurable satellite in response to the tuning information in the routing table by changing an up converter frequency and down converter frequency from a first frequency range to a second frequency range using a programmable frequency synthesizer."

Claim 28 is a method claim that recites "storing frequency tuning information in a routing table" and "reconfiguring the frequency configuration of the payload of the reconfigurable satellite in response to the tuning information in the routing table by changing an up converter frequency and down converter frequency from a first frequency range to a second frequency range using a programmable frequency synthesizer."

The *Pizzicaroli* reference also does not teach or suggest reconfiguring the frequency configuration of the payload of the reconfigurable satellite in response to the tuning information or routing table by changing an up converter and a down converter frequency using a

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reprogrammable frequency synthesizer. Claim 28 is similar to Claims 1 and 15 in that the reconfiguration is performed in response to the tuning information in the routing table.

**The rejection of Claims 21-27 and 29-31 under 35 U.S.C. §103(a) over *Floury et al.* (5,963,845), *Wolcott* (6,317,583) and *Siwiak* (5,640,166) in further view of *Pizzicaroli* (5,813,634) and *Brown* (6,157,621)**

*Dependent Claim 21*

As mentioned above, the *Floury*, *Siwiak*, *Pizzicaroli* and *Brown* references do not teach or suggestion reconfiguring the frequency reconfiguration of the payload of the reconfigurable satellite in response to the tuning information in the routing table by changing an up converter frequency and a down converter frequency using a programmable frequency synthesizer. Appellants, therefore, respectfully request the Board to reverse the Examiner's rejection of Claims 21-27 and 29-31.

More specifically, claim 21 recites that the step of reconfiguring a satellite in claim 18 comprises changing the amplitude or phase coefficients of a transmit and receive beam. The base step of reconfiguring in claim 18 recites reconfiguring the frequency configuration of the payload of the reconfigurable satellite in response to the tuning information in a routing table by changing an up converter and down converter frequency using a programmable frequency synthesizer. Appellants admit that steering beams using amplitude or phase coefficients is known. However, the Examiner fails to allege that any of the three references teaches that reconfiguring a satellite comprises changing the amplitude or phase coefficients of a transmit and receive beam in response to tuning information in a routing table. Appellants, therefore, respectfully request the Board to reverse the Examiner's position with respect to claim 21.

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*Dependent Claim 22*

Claim 22 recites the further step of storing tuning information in a routing table. This claim stands or falls together with claim 18.

*Dependent Claim 23*

Claim 23 recites that the step of reconfiguring the payload comprises changing the amplitude or phase coefficients of a beam in response to the tuning information in a routing table. Claim 23 is more specific than claim 21 described above. Claim 21 recites that the amplitude or phase coefficients are changed in response to the tuning information in the routing table. As mentioned above, there is no teaching or suggestion provided by the Examiner for the combination of the amplitude or phase coefficients in the step of reconfiguring. Therefore, Appellants respectfully submit that claim 23 is also allowable for the same reasons set forth above with respect to claim 21.

*Dependent Claims 24 and 25*

Claims 24 and 25 stand or fall together with independent claim 18.

*Dependent Claim 26*

Claim 26 recites that the routing table is updated from an order wire. The Examiner points to column 43, lines 46 to column 44, line 9, and column 49, lines 10-20 for this teaching. Appellants can find no teaching or suggestion for an order wire in these passages. Therefore, claim 26 is believed to be allowable.

*Dependent Claim 27*

The Examiner also points to the same sections with respect to claim 26 for the RF control channel. Appellants can find no teaching or suggestion for an RF control channel in these passages as well. Therefore, claim 27 is believed to be allowable.

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*Dependent Claim 29*

Claim 29 is similar to claim 23 above. As mentioned above, there is no teaching or suggestion provided in the references for this proposition.

*Dependent Claim 30*

Dependent claim 30 corresponds to claim 26 and is believed to be allowable for the same reasons set forth above.

*Dependent Claim 31*

Claim 31 corresponds to claim 27 described above and is believed to be allowable for at least the same reasons.

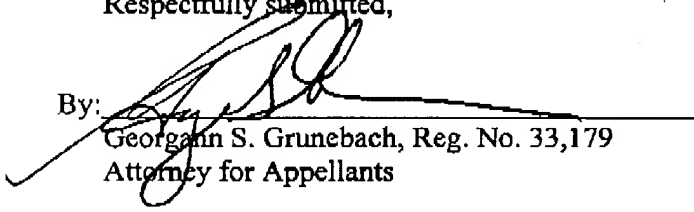
**Conclusion**

For the foregoing reasons, Appellants respectfully request that the Board direct the Examiner in charge of this examination to withdraw the rejections.

Please charge any fees required in the filing of this appeal to deposit account 50-0383.

Respectfully submitted,

Dated: April 19, 2007

By:   
Georgann S. Grunebach, Reg. No. 33,179  
Attorney for Appellants

The DIRECTV Group, Inc.  
CA/LA1/A109  
2230 East Imperial Highway  
P.O. Box 956  
El Segundo, CA 90245  
Telephone: (310) 964-4615



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**VIII. Claims Appendix**

1. A system for providing high frequency data communications in a satellite-based communications network, the system comprising:

a plurality of communications satellites each having uplink and downlink antennas capable of receiving and transmitting a plurality of signals, each of said satellites having a communication control circuit;

at least one of said satellites being a reconfigurable satellite having a programmable frequency synthesizer coupled to an up converter and a down converter of a communications control circuit;

a routing table storing tuning information therein;

a controller located on said satellite coupled to said communications control circuit, said controller controlling a frequency reconfiguration of said communications control circuit from a first frequency range to a second frequency range through said programmable frequency synthesizer in response to said tuning information.

2. A system as recited in claim 1 wherein each of said satellites further comprising a beam forming network coupled to said uplink and downlink antennas.

3. A system as recited in claim 1 wherein said communications control circuit comprises an up converter and a down converter.

4. A system as recited in claim 1 wherein said communications control circuit comprises a transponder.

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5. A system as recited in claim 4 wherein said transponder comprises an up converter and a down converter.

6. A system as recited in claim 1 wherein said communications control circuit comprises a time division multiple access switch.

7. A system as recited in claim 1 wherein said communications control circuit comprises a packet switch.

8. A system as recited in claim 1 wherein said plurality of communications satellites have an orbit selected from the group consisting of a LEO, MEO and GSO.

11. A payload circuit as recited in claim 15 wherein said communications control circuit comprises a transponder.

12. A payload circuit as recited in claim 11 wherein said transponder comprises the up converter and the down converter.

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15. A payload circuit for a satellite comprising:

a receive array;

a receive beam forming network;

a transmit array;

a transmit beam forming network;

a communications control circuit for controlling communications of said satellite, said communications control circuit being an up converter and a down converter; and

a reconfiguration circuit coupled to the communications control circuit for reconfiguring the communications control circuit, said reconfiguration circuit comprising a programmable frequency synthesizer coupled to the up converter and down converter, an on-board computer and a routing table having tuning information stored therein, said on-board computer controlling a reconfiguration of said communications control circuit from a first frequency range to a second frequency range through said programmable frequency synthesizer in response to said tuning information.

16. A payload circuit as recited in claim 15 wherein said communications control circuit comprises a time division multiple access switch.

17. A payload circuit as recited in claim 15 wherein said communications control circuit comprises a packet switch.

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18. A method of configuring a satellite system having a plurality of satellites comprising the steps of:

deploying a reconfigurable satellite;

transmitting reconfiguration instructions to said satellite;

reconfiguring the frequency configuration of the payload of the reconfigurable satellite in response to the tuning information in a routing table by changing an up converter frequency and down converter frequency from a first frequency range to a second frequency range using a programmable frequency synthesizer;

repositioning a satellite from a network position; and

moving the reconfigurable satellite into the network position.

21. A method as recited in claim 18 wherein the step of reconfiguring a satellite comprises changing the amplitude or phase coefficients of a transmit and receive beam.

22. A method as recited in claim 18 further comprising storing tuning information in a routing table.

23. A method as recited in claim 18 wherein the step of reconfiguring the payload comprises changing the amplitude or phase coefficients of a beam in response to the tuning information in the routing table.

24. A method as recited in claim 18 wherein moving the reconfigurable satellite is performed using east/west station keeping.

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25. A method as recited in claim 18 wherein moving the reconfigurable satellite is performed using north/south station keeping.

26. A method as recited in claim 18 further comprising updating the routing table from an order wire.

27. A method as recited in claim 18 further comprising updating the routing table from an RF control channel.

28. A method of configuring a satellite comprising:  
deploying a reconfigurable satellite;  
storing frequency tuning information in a routing table;  
transmitting reconfiguration instructions to said satellite;  
reconfiguring the frequency configuration of the payload of the reconfigurable satellite in response to the tuning information in the routing table by changing an up converter frequency and down converter frequency from a first frequency range to a second frequency range using a programmable frequency synthesizer.

29. A method as recited in claim 28 wherein the step of reconfiguring the payload comprises changing the amplitude or phase coefficients of a beam in response to the tuning information in the routing table.

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30. A method as recited in claim 28 further comprising updating the routing table from an order wire.

31. A method as recited in claim 28 further comprising updating the routing table from an RF control channel.

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**IX. Evidence Appendix**

None.

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**X. Related Proceedings Appendix**

None.